

## **Clinical use of transpalpebral diaton tonometry after keratophotorefractive surgeries**

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**Purpose:** The purpose of the study is to evaluate the clinical use of transpalpebral scleral tonometry, reliability of its application in patients with refraction anomaly in pre- and postoperational periods, dynamics of eye morphometric rates (pachymetry of the central corneal zone, IOP) and their correlative bond before and after photorefractive surgery.

**Setting:** Russian State Medical University, Moscow, Russia.

**Methods:** The following factors were exclusion criteria from the study: cornea, upper eyelid and clera pathology. We have analyzed the results of prospective comparative case series clinical study in 98 patients (194 eyes) with ametropia, from which 39 persons (76 eyes), who had been subjected to excimerlaser vision correction. All patients were subject to the complete refractive examination, including keratotopography, wavefront-aberrometry, US-biomicroscopy, pachymetry corneal thickness in central zone, IOP was measured with Goldman applanation tonometer, pneumotonometer and transpalpebral scleral Diaton tonometer using traditional methodology.

**Results:** In the patients who had not been subjected to photorefractive surgery the mean applanation IOP was  $16.1 \pm 2.6$  mmHg, the mean IOP evaluated with Diaton  $14.7 \pm 2.5$  mmHg. At that correlation between values of the applanation tonometer and Diaton was highly reliable  $r=0.73$ . The mean of the real IOP after applanation value conversion was  $15.4 \pm 2.4$  mmHg. Pearson correlation coefficient between real IOP and the Diaton result was 0.89. In the groups of patients, who underwent photorefractive vision correction, the mean applanation IOP  $12.4 \pm 2.91$  mmHg, modified taking into account keratometry IOP rates  $13.9 \pm 3.0$  mmHg, mean diaton-tonometry result  $15.1 \pm 2.75$  mm Hg - increase of correlation coefficient from 0.51 to 0.81.

**Conclusions:** The cornea thickness is an important factor in IOP evaluation and monitoring, and necessitates the inclusion of corneal pachymetry in the program of examination the patients with suspicion of glaucoma and hypertension, especially after various keratorefractive surgeries while using the traditional corneal methods of ophthalmotonometry. At the same time clinical application of transpalpebral scleral diaton tonometer makes it possible to evaluate IOP using only one device, the procedure being efficient, economical, simple and requires no additional instrument examination.

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